How Discrimination, Social Support, And English Proficiency Impact Depression In South Asian Immigrants: The Mediators Of Atherosclerosis In South Asians Living In America Study

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How Discrimination, Social Support, and English Proficiency Impact Depression in South Asian Immigrants: The Mediators of Atherosclerosis in South Asians Living in America Study

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First Reader: Mayur Desai
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Finally, I send love and gratitude to my mother, my family, and my friends for all their support throughout this process.
Abstract

Objectives: Discrimination, low social support, and low English proficiency negatively impact the mental health of immigrants. More work is needed to investigate the relationship between these factors and depression in South Asian immigrants. We examined the cross-sectional associations between chronic discrimination, low social support, low English proficiency, and depression in South Asians using data from the Mediators of Atherosclerosis in South Asians Living in America (MASALA) study.

Methods: We fit logistic regression models to evaluate the associations between discrimination, social support, English proficiency, and depression in a sample of 887 South Asian adults. We also explored how discrimination, social support, and language proficiency may interact to synergistically increase the odds of depression.

Results: We found that 131 people, or 14.8% of the sample, were depressed. High chronic discrimination and low social support led to a higher odds of depression; low English proficiency was not significantly correlated with depression after adjusting for education. Low English proficiency and low social support interacted synergistically with discrimination: both factors increased the impact of discrimination on the odds of depression. However, these interactions were not statistically significant. English proficiency and social support did not interact to increase the odds of depression.

Conclusions: Discrimination and social support are correlated with depression in South Asian immigrants, and discrimination interacts with social support and English proficiency to impact mental health. Given the stressors that South Asians face as immigrants and the growing South Asian community in the United States, it is essential for clinicians to consider work that examines how discrimination, social support, and language proficiency affect the mental health of this population.
Introduction

Currently, more than 40 million immigrants are living in the United States: more immigrants than in any other country in the world [1]. Asians are the fastest growing immigrant group in the country [2]. Asian immigrants in the United States face stressors like discrimination, low social support, and limited English language proficiency, which negatively impact their mental health [3-10]. Social support from friends or family has been found to moderate the association between discrimination and poor mental health in Asians [11-13]. In addition, one study found that Chinese immigrant men with limited English proficiency are more likely to show an unmet need for mental health treatment [14].

Past work has tended to aggregate data for heterogeneous Asian immigrant subgroups, although researchers recognize that these subgroups have very different experiences with stressors and mental health [15-16]. More work is needed to understand the relationship between stressors and poor mental health for Asian subgroups, such as South Asians [7]. One such stressor, discrimination against South Asian immigrants, has an established history. For example, many South Asians reported experiencing racial harassment in the wake of the 9/11 attacks [18]. It is important to investigate the potential mental health ramifications of discrimination on South Asians in the United States, given that discrimination against this group is common.

Previously, researchers found that perceived discrimination was positively associated with depression in a sample of 169 South Asians, and that family support moderated this association [12]. The Mediators of Atherosclerosis in South Asians Living in America (MASALA) study provides us with the opportunity to work with a much larger sample of South Asians. An analysis using data from the MASALA study
specifically examined the relationship between discrimination and depressive symptoms among Asian Indians in the sample and showed that discrimination was linearly associated with depressive symptoms. In that study, social support did not moderate the relationship between discrimination and depressive symptoms [18].

This secondary data analysis used the MASALA study to investigate the associations between chronic discrimination, social support, English proficiency, and current depression in a relatively large sample of South Asian adults in the United States. We predicted that chronic discrimination, low English proficiency, and low social support would all be independent correlates of depression. We also hypothesized that discrimination, social support, and English proficiency would synergistically interact, so that the combination of any two of these variables would lead to a substantially larger odds of depression compared with the impact of any of the variables on their own.

**Methods**

The MASALA cohort study is dedicated to finding predictors of subclinical cardiovascular disease among adult South Asians in the United States [19]. MASALA collected baseline data from 906 South Asian adults in the San Francisco Bay and greater Chicago areas between 2010 and 2013 [20]. Nineteen people in the baseline sample were born in the United States: these participants were excluded from our analysis, as we were interested in specifically studying South Asian immigrants. Therefore, our final sample had 887 participants. Twenty-six of these participants were missing income data; thus, our models that adjusted for sociodemographic variables had 861 participants. The baseline examination included sociodemographic questions, psychosocial instruments, and clinical measures.
In this study, we investigated the cross-sectional associations between discrimination, English proficiency, social support, and current depression. The specific measures used to operationalize our variables of interest are described below.

**Measures**

**Depression**

During the baseline exam, participants were administered the Center for Epidemiologic Studies-Depression (CES-D) scale, a twenty-item instrument used to assess depressive symptoms [21]. Scores range from 0-60, and a score of 16 or greater is considered high [21]. We defined our outcome, current depression, as scoring 16 or greater on the CES-D scale or as current use of an antidepressant, selective serotonin reuptake inhibitor (SSRI), or serotonin-norepinephrine reuptake inhibitor (SNRI).

**Discrimination**

Participants were administered the Williams Everyday Discrimination Scale, which measures chronic experiences of discrimination. The nine-item scale results in scores between 9 and 54, and includes questions that measure the frequency of experiences of “being treated with less courtesy than others; less respect than others; receiving poorer service than others in restaurants or stores; people acting as if you are not smart; they are better than you; they are afraid of you; they think you are dishonest; being called names or insulted; and being threatened or harassed” [22]. There was no previously established cut-off score to determine high discrimination using this scale. There seemed to be a threshold in the top 25% of scores where prevalence of depression increased compared to the bottom three quartiles. Therefore, we classified approximately the top 25% of scores in our sample as high discrimination: this included those with a score of ≥18.
Social Support

At baseline, MASALA participants were given the ENRICHD Social Support Instrument (ESSI), a six-item scale that asked them to report how often (from 1=none of the time to 5=all of the time) they had: 1) someone available to listen to them, 2) someone available to give them advice, 3) someone available to show them love and affection, 4) someone available to help with chores, 5) someone available to provide emotional support, and 6) as much close contact as desired with a confidant, for a potential score of 6-30 [23-24]. Similarly to the discrimination scale, there was no established cut-off to define low social support. We found a threshold effect, so that the bottom quartile of scorers had a higher prevalence of depression. Thus, we classified approximately the bottom 25% of scores in our sample as low social support. This included all participants who scored between 6 and 22 on the ESSI.

English Proficiency

Participants were asked to self-report their level of English proficiency: specifically, whether they speak English “not at all/poorly,” “fairly well,” or “well/very well.” We classified participants who spoke English “well/very well” as having high English proficiency, and those who spoke “not at all/poorly” or “fairly well” as having low English proficiency.

Sociodemographic variables

We considered the following sociodemographic variables as potential confounders of the association between discrimination and current depression: age, sex, annual income category (<$75,000 or ≥$75,000), marital status (married or not married), education (>Bachelor’s degree, Bachelor’s degree, or <Bachelor’s degree), and
religion (Hindu, Muslim, Sikh, Christian, or no religion/other religion). Previous work shows that these factors are correlated with depression [25-29].

**Statistical Analysis**

First, we calculated unadjusted associations between study variables and depression through Pearson’s chi-squared test. Then, we fit a logistic regression model to assess whether high levels of discrimination, low levels of social support, and low English proficiency were independently associated with depression. We predicted that high discrimination, low social support, and low English proficiency would be independently associated with higher levels of current depression, even after adjusting for sociodemographic variables. Discrimination, social support, and English proficiency were all included in the same model so that we could see the impact of each factor independently of the other two variables.

We created three combination logistic regression models to examine whether discrimination, social support, and English proficiency interact. We hypothesized that these factors would interact synergistically, so that the impact of any two factors would be worse (i.e., lead to a higher odds ratio) compared with the component factors on their own. For example, a combination of low social support and high discrimination would lead to a higher odds ratio of current depression compared to high social support/high discrimination, low social support/low discrimination, or high social support/low discrimination. The high support/low discrimination category served as our reference. We investigated the interactions between discrimination and social support, discrimination and English proficiency, and social support and English proficiency.

We tested these interactions by examining whether the combination groups with both negative factors (i.e. high discrimination and low social support) had higher odds
ratios compared with the groups with only one negative factor; we also tested the
statistical significance of the interaction terms. We did this by creating three variables
that were cross-products of the relevant factors. We then fit adjusted logistic regression
models predicting odds of depression from each interaction term, the three independent
variables of interest (discrimination, social support, and English proficiency), and
relevant sociodemographic variables.

All sociodemographic variables examined were initially included in the logistic
regression models, and a backwards elimination strategy was used to find the most
parsimonious model. SAS software version 9.4 was used for all analyses (SAS Institute
Inc., Cary, N.C., USA).

**Results**

Table 1 shows sociodemographic characteristics of the sample. We found that 131
out of 887 participants (14.8%) qualified as currently depressed. The mean age is
around 56, the sample is 53.8% male and 46.2% female, and 91.2% of participants are
married. As for socioeconomic status, 73.1% of the sample has an annual income of
$75,000 or greater, and 59.0% of participants have some form of graduate education
beyond a Bachelor’s degree. The majority of participants are Hindu (69.5%). Other
faiths represented are Islam (7.2%), Sikhism (7.7%), Christianity (2.8%), and no religion
or other religion (12.9%). The majority of the sample (85.3%) was born in India, but
other countries of origin included Pakistan, Bangladesh, Nepal, Burma, Sri Lanka, the
Fiji Islands, and sub-Saharan Africa.

We ran Pearson’s chi-squared tests for variables of interest (discrimination,
social support, and English proficiency), and potential sociodemographic confounders
(age, sex, religion, education, income, and marital status). In these unadjusted analyses, all variables investigated were associated with depression at the p=0.05 level except for age (p=0.98). All sociodemographic variables were initially included in logistic models, before the models were reduced to be more parsimonious.

Table 2 shows the logistic regression model where high discrimination, low English proficiency, and low social support were investigated as independent correlates. In the sample, 232 participants (26.2%) faced high discrimination, 222 participants had low social support (25.0%), and 120 participants had low English proficiency (13.5%). High discrimination and low social support were associated with a higher odds of depression, both in the unadjusted model and after controlling for sociodemographic variables and for the other variables of interest. In the adjusted model, those experiencing high discrimination had 3.9 times the odds of being depressed compared to the low discrimination group (p<0.01). Around 31% of those with high discrimination were depressed, compared to 9% of those with low discrimination. Those with low social support had 5.6 times the odds of depression compared to the high social support group (p<0.01); 35% of the low social support category was depressed compared to 8% of the high social support category. Participants with low English proficiency had 1.2 times the odds of depression compared to the high proficiency group; however, this odds ratio was not significant (p=0.62). Around 28% of low proficiency participants were depressed, compared to 13% of the high proficiency participants.

**Potential Interactions**

In Table 3, we show the logistic models investigating the interaction between low social support and high discrimination. After controlling for age, sex, religion, education, income, and English proficiency, people experiencing both low social support
and high discrimination had the highest odds of depression compared to the reference group (OR=22.3, p<0.01). Around 51% of that group was depressed, compared with just 6% of the reference group. Those experiencing low discrimination and low support had 5.2 times the odds of depression compared to the reference group (p<0.01), and 22% of that category was depressed. Finally, those with high discrimination and high social support had 3.7 times the odds of being depressed compared to the reference group (p<0.01), and 16% of the category was depressed. Thus, social support and discrimination interacted synergistically so that the two factors together had an increased impact on mental health beyond the effect of each factor on its own.

Table 4 shows the logistic regression models investigating the interaction between discrimination and English proficiency. We found that 8% of the reference group was depressed, compared with 18% of the low English proficiency group, 27% of the high discrimination group, and 57% of the group with both high discrimination and low English proficiency. In the adjusted model, after controlling for age, religion, education, sex, income, and social support, participants with low English proficiency and high discrimination had the highest odds of depression, OR=5.3, compared to the reference group (p<0.01). Those with high English proficiency and high discrimination had 3.7 times the odds of depression compared to the reference group (p<0.01), and those with low English proficiency and low discrimination had a non-significant 1.0 odds of depression compared to the reference group (p=0.94). As we hypothesized, low English proficiency interacted with discrimination resulting in an increased impact on depression in the sample.

Finally, we investigated the interaction between social support and English proficiency; these results are shown in Table 5. In the reference group, 6% of
participants were depressed; this rose to 20% of the low English proficiency group, 33% of the low social support group, and 48% of the group with both low English proficiency and low social support. Solely low English proficiency led to a non-significant adjusted odds ratio of 1.3 (p=0.50), and solely low social support led to an adjusted odds ratio of 5.9 (p<0.01). The group that experienced both low English proficiency and low social support had an adjusted odds ratio of 5.9 (p<0.01). Thus, there was no additional impact on the odds of depression by adding English proficiency to low social support; low support explained the increased odds of depression on its own. However, in the unadjusted model, the odds ratio for the low support/low proficiency group was 14.2 compared to an odds ratio of 7.2 in the low support/high proficiency group. This effect disappeared in the adjusted model, specifically after adjusting for education.

When we tested the statistical significance of these interactions by using multiplicative interaction terms in an adjusted model, none of the interactions were significant. Though the interactions between social support & discrimination and between English proficiency & discrimination led to increased odds ratios so that the two variables of interest acted in concert, these interactions were not significant.

**Discussion**

Chronic discrimination and social support were independently associated with depression. Low English language proficiency was not independently associated with depression after adjusting for confounding variables, despite previous work finding that low English proficiency was independently associated with psychological distress among Asians as a homogenous group [30]. This may be due to the smaller prevalence of low
English proficiency among South Asians [6]. Education seemed to account for the association between English proficiency and depression in the unadjusted model.

Social support was both independently associated with depression and interacted with discrimination: low social support worsened the negative impact of chronic discrimination on mental health. The measure of social support used assesses both emotional support and, to some degree, instrumental support. Participants with richer sources of social support may have access to people with whom they can process their emotions and discuss how to combat discrimination, thus reducing the impact of discrimination on their mental health. Social support and English proficiency seemed to interact in the unadjusted model, but adjusting for education explained the interaction.

In the discrimination/social support combination model, the adjusted odds ratios were greater than the unadjusted odds ratios. Here, sex acted as a negative confounder. Women in the sample were more likely to be depressed, but were less likely to face high levels of discrimination (Pearson’s chi-squared $p=0.03$). The relationship between sex and depression is well-documented [26]; the association between sex and discrimination found here requires further exploration. It is possible that South Asian women face a different kind of discrimination than South Asian men. Men may be more likely to experience the types of discrimination described by the Williams discrimination scale (e.g. being threatened or harassed, people acting as if they are afraid of you) [22].

Although English language proficiency was not independently associated with depression, this variable did interact with discrimination. We hypothesize that limited English proficiency inhibits South Asians in the sample from actively coping with discrimination, i.e., from 1) standing up for themselves interpersonally, 2) seeking institutional recourse after discriminatory incidents, or 3) processing their feelings
effectively in social spaces or professional mental health settings. Previous work indicates that this active, problem-based coping style is better for the mental health of Asian Americans experiencing racial discrimination [18, 31].

Despite the fact that discrimination interacted with social support and English proficiency to increase the odds of depression, these interactions were not statistically significant. This is despite the large differences in prevalence of depression among the categories in the combination models. It is also despite the dramatic increase in odds ratios from the singular variables of either high discrimination or low social support (OR=3.7, OR=5.2) to both high discrimination and low social support (OR=22.3). Our failure to detect a significant interaction here may be due to a lack of power.

This research aligns with previous work where family support moderated the association between discrimination and depression in 169 South Asians [12]. However, it seemingly contradicts a previous analysis of MASALA data which found that social support did not moderate the association between discrimination and depression [18]. The previous study examined only the Asian Indian subsample. Depression and social support were examined continuously, compared to the dichotomous approach taken here. Interaction terms were created by multiplying centered continuous moderators by the centered continuous predictor variable; they did not examine odds ratios. If we had solely looked at the significance of our interaction term, we also would not have found a moderating effect. Looking at the odds ratios presents a more complicated picture. These significant methodological differences may account for the difference in results.

**Limitations and Implications for Future Work**

This study has some limitations. The biggest limitation is that this analysis was cross-sectional, meaning that we cannot draw any conclusions about the direction of the
associations between discrimination, English proficiency, social support, and depression. The measures are based on self-report. Because the discrimination and social support measures were skewed, so that few people scored high on discrimination or low on support, the ranges chosen to classify the highest 25% discrimination scores and the lowest 25% social support scores were quite wide. In addition, there were relatively few people that qualified as currently depressed (n=314) and that reported low English proficiency (n=120). Thus, the number of people in the highest risk category of the discrimination/proficiency combination variable was small.

Despite these limitations, this study is the first to examine the impacts of discrimination, social support, and limited English proficiency on the mental health of South Asian immigrants. It has a larger sample size compared to previous work that disaggregated data from Asian Americans [12]. Results are generalizable to South Asian adults living in urban centers in the United States.

It is important to understand the negative impact of these experiences, common among immigrants, on mental health. This work can help identify South Asian patients at high risk of depression and design interventions to address their mental health needs. For example, it seems that social support is extremely important to the mental health of this population. Mental health clinicians may want to screen for low social support in South Asians; perhaps future interventions among South Asian immigrant populations can aim to increase patients’ levels of emotional and instrumental social support.

As there is likely variation within the South Asian group by nationality or religion, future work should also seek to disaggregate South Asians. However, more work regarding the mental health of South Asians as a whole is also needed. More work with larger samples is also necessary on how depression, social support, and language
proficiency impact mental health in other Asian immigrant subgroups, as existing studies have either had very small sample sizes or use aggregated data [3, 6, 9-12].

There are almost 5.4 million South Asians living in the United States today, and the population grew 40% between 2010 and 2017 [31]. Twenty percent of Asian Americans are of South Asian descent, and Asian Americans are the fastest growing ethnic group in the United States [2]. The recent rash of hate crimes against Asian Americans in the midst of the coronavirus pandemic has emphasized the importance of researching how discrimination, among other stressors, impacts the mental health of Asians in the United States [32-33]. Work that critically examines the unique factors that affect the mental health of South Asian immigrants is needed now more than ever.
**Tables**

Table 1: Description of sample and unadjusted associations with current depression (n=887)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N (%)*</th>
<th>n (%) with Depression</th>
<th>p**</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Sample</strong></td>
<td>887</td>
<td>131 (14.8)</td>
<td></td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>477 (53.8)</td>
<td>58 (12.2)</td>
<td>0.02</td>
</tr>
<tr>
<td>Female</td>
<td>410 (46.2)</td>
<td>73 (17.8)</td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td>0.98</td>
</tr>
<tr>
<td>39-49</td>
<td>278 (31.3)</td>
<td>42 (15.1)</td>
<td></td>
</tr>
<tr>
<td>50-59</td>
<td>298 (33.6)</td>
<td>42 (14.1)</td>
<td></td>
</tr>
<tr>
<td>60-69</td>
<td>235 (26.5)</td>
<td>35 (14.9)</td>
<td></td>
</tr>
<tr>
<td>70-83</td>
<td>76 (8.6)</td>
<td>12 (15.8)</td>
<td></td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Hindu</td>
<td>616 (69.5)</td>
<td>69 (11.2)</td>
<td></td>
</tr>
<tr>
<td>Muslim</td>
<td>64 (7.2)</td>
<td>22 (34.4)</td>
<td></td>
</tr>
<tr>
<td>Sikh</td>
<td>68 (7.7)</td>
<td>13 (19.1)</td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td>25 (2.8)</td>
<td>9 (36.0)</td>
<td></td>
</tr>
<tr>
<td>No religion/other</td>
<td>114 (12.9)</td>
<td>18 (15.8)</td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Less than Bachelor's</td>
<td>108 (12.2)</td>
<td>33 (30.6)</td>
<td></td>
</tr>
<tr>
<td>Bachelor's</td>
<td>256 (28.9)</td>
<td>47 (18.4)</td>
<td></td>
</tr>
<tr>
<td>Greater than Bachelor's</td>
<td>523 (59.0)</td>
<td>51 (9.8)</td>
<td></td>
</tr>
<tr>
<td><strong>Annual Income</strong></td>
<td></td>
<td></td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>&lt;75k</td>
<td>232 (27.0)</td>
<td>59 (25.4)</td>
<td></td>
</tr>
<tr>
<td>≥75k</td>
<td>629 (73.1)</td>
<td>66 (10.5)</td>
<td></td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>Married</td>
<td>813 (91.2)</td>
<td>112 (13.8)</td>
<td></td>
</tr>
<tr>
<td>Not Married</td>
<td>74 (8.3)</td>
<td>19 (25.7)</td>
<td></td>
</tr>
</tbody>
</table>

*Column percentages may not sum to total due to rounding

**P-value for chi-squared test
Table 2: Logistic regression: Discrimination, Social Support, and English Proficiency as Independent Correlates of Depression

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)*</th>
<th>n (%) with depression</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)**</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discrimination</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (9-17)</td>
<td>655 (73.8)</td>
<td>60 (9.2)</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>High (18-54)</td>
<td>232 (26.2)</td>
<td>71 (30.6)</td>
<td>4.4 (3.0, 6.4)</td>
<td>3.9 (2.5, 6.2)</td>
</tr>
<tr>
<td><strong>Social Support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High (23-30)</td>
<td>665 (75.0)</td>
<td>54 (8.1)</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>Low (6-22)</td>
<td>222 (25.0)</td>
<td>77 (34.7)</td>
<td>6.0 (4.1, 8.9)</td>
<td>5.6 (3.5, 8.9)</td>
</tr>
<tr>
<td><strong>English proficiency</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High (well or very well)</td>
<td>767 (86.5)</td>
<td>98 (12.8)</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>Low (not at all, poor or fairly well)</td>
<td>120 (13.5)</td>
<td>33 (27.5)</td>
<td>2.6 (1.6, 4.1)</td>
<td>1.2 (0.6, 2.3)</td>
</tr>
</tbody>
</table>

*Column percentages may not sum to total due to rounding

**Adjusted for age, religion, education, sex, income, & other variables of interest (discrimination, social support, English proficiency)

Table 3: Logistic regression: Discrimination & Social Support Combination Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)*</th>
<th>n (%) with depression</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)**</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discrimination &amp; Social Support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low discrimination, high social support</td>
<td>530 (59.8)</td>
<td>32 (6.0)</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>High discrimination, high social support</td>
<td>135 (15.2)</td>
<td>22 (16.3)</td>
<td>3.0 (1.7, 5.4)</td>
<td>3.7 (1.9, 6.9)</td>
</tr>
<tr>
<td>Low discrimination, low social support</td>
<td>125 (14.1)</td>
<td>28 (22.4)</td>
<td>4.5 (2.6, 7.8)</td>
<td>5.2 (2.8, 9.6)</td>
</tr>
<tr>
<td>High discrimination, low social support</td>
<td>97 (10.9)</td>
<td>49 (50.5)</td>
<td>15.9 (9.3, 27.1)</td>
<td>22.3 (12.0, 41.2)</td>
</tr>
</tbody>
</table>

*Column percentages may not sum to total due to rounding

**Adjusted for age, religion, education, sex, income, and English proficiency
### Table 4: Logistic regression: Discrimination & English Proficiency Interaction Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)*</th>
<th>n (%) with depression</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discrimination &amp; English Proficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low discrimination, high English proficiency</td>
<td>565 (63.7)</td>
<td>44 (7.8)</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>Low discrimination, low English proficiency</td>
<td>90 (10.2)</td>
<td>16 (17.8)</td>
<td>2.6 (1.4, 4.8)</td>
<td>1.03 (0.5, 2.3)</td>
</tr>
<tr>
<td>High discrimination, high English proficiency</td>
<td>202 (22.8)</td>
<td>54 (26.7)</td>
<td>4.3 (2.8, 6.7)</td>
<td>3.7 (2.2, 6.2)</td>
</tr>
<tr>
<td>High discrimination, low English proficiency</td>
<td>30 (3.4)</td>
<td>17 (56.7)</td>
<td>15.5 (7.1, 33.9)</td>
<td>5.3 (2.1, 13.8)</td>
</tr>
</tbody>
</table>

*Column percentages may not sum to total due to rounding

**Adjusted for age, religion, education, sex, income, and social support

### Table 5: Logistic regression: Social Support & English Proficiency Interaction Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)*</th>
<th>n (%) with depression</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Support &amp; English Proficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High social support, high English proficiency</td>
<td>576 (64.9)</td>
<td>36 (6.3)</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>High social support, low English proficiency</td>
<td>89 (10.0)</td>
<td>18 (20.2)</td>
<td>3.8 (2.1, 7.1)</td>
<td>1.3 (0.6, 3.0)</td>
</tr>
<tr>
<td>Low social support, high English proficiency</td>
<td>191 (21.5)</td>
<td>62 (32.5)</td>
<td>7.2 (4.6, 11.3)</td>
<td>5.9 (3.5, 9.8)</td>
</tr>
<tr>
<td>Low social support, low English proficiency</td>
<td>31 (3.5)</td>
<td>15 (48.4)</td>
<td>14.1 (6.4, 30.7)</td>
<td>5.9 (2.4, 14.9)</td>
</tr>
</tbody>
</table>

*Column percentages may not sum to total due to rounding

**Adjusted for age, religion, education, sex, income, and discrimination
References


34. Loffman, M. *Asian Americans describe “gut punch” of racist attacks during coronavirus pandemic.* (2020, April 7). PBS NewsHour.